

Mitchell's Musings 5-20-2013: Consistency May Be a Hobgoblin We Need to Mind

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The usual quote from Ralph Waldo Emerson is, “A foolish consistency is the hobgoblin of little minds, adored by little statesmen and philosophers and divines.”¹ But consistency has its virtues, especially in presenting economic statistics that are commonly used for time-series analysis. In past musings, I have noted the change in behavior of employment after the dot-com bust of the early 2000s. The ratio of employment to labor-force- age population began to slip. After the Great Recession, employment fell dramatically and has yet to return to its prior peak, let alone catch up with the underlying population growth.

Of course, labor consists of more than just numbers of persons employed. The hours that those persons work can also vary. Do total labor hours show the same basic pattern as employment? As the chart below indicates, hours worked tell the same general story as employment. After a long history of increase in hours worked, there was stagnation at best during and after the dot-com bust. And since the Great Recession ended, hours have yet to come back to their previous absolute peak.

Business Sector: Hours worked, 2005 = 100

Source: U.S. Bureau of Labor Statistics



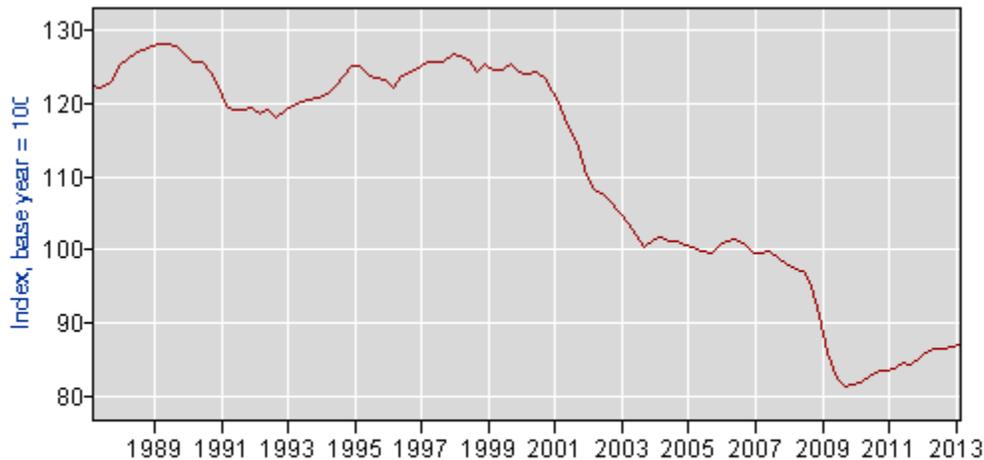
We have also previously noted the development of an even weaker picture for manufacturing-based employment. In that sector, the stagnation began in the 1990s. After the dot-com bust, employment in manufacturing fell off a cliff and showed no recovery. The Great Recession caused a further drop in manufacturing jobs with only a mild recovery thereafter. Looked at from the perspective of worker

¹ <http://www.bartleby.com/100/420.47.html>

hours, the same pattern is found, as shown on the chart below. Sadly, we don't have a continuous series before 1987, unlike the data we have for the total business sector, because of a shift from SIC to NAICS industrial coding. That is one of those nasty inconsistencies noted at the outset.

Manufacturing: Hours Worked, 2005 = 100

Source: U.S. Bureau of Labor Statistics



Let's just focus on the period since the peak of the dot-com boom/bust episode, 2000-2012. According to the official measures, over that period, real output in the business sector rose at an annual rate of 1.7%. (That figure is an average over the booms and busts). But productivity (output per hour) rose at 2.2% per annum. So hours worked *dropped* at a rate of 0.4%. (These numbers are rounded.) The official story is thus that the rapid pace of productivity outweighed the growth in real output, thus dropping the demand for labor hours. The popular version of the story is that "technology" displaced workers who might otherwise have been employed.

What about in manufacturing? There the story is that real output was essentially flat from 2000 to 2012 (with bumps in the middle). But productivity (output per hour) grew 3.0% per annum so that hours worked *fell* at a rate of 2.9% per annum. It's the same story as for the business sector but with more "technology" plus outsourcing abroad holding back real output domestically. In both cases, there is a puzzle of weak labor demand which is "resolved" by a tale of a technology boom.

Is there any problem with this story? There is at least a question. In the abstract, real output is an easy concept to understand. But in terms of measurement there are complex issues. Basically, nominal dollar values must be deflated by price indexes - which can be composed in various ways - and then the results must be aggregated using a weighted formula. The real output numbers used for productivity calculations essentially come from the national income (GDP) accounts so let's start there.

Many changes have been made over the last couple of decades in how price indexes are formulated, how they are adjusted for quality, etc. So let's go back to the 1980s and look at how growth in real GNP (the standard used at the time was Gross *National* Product rather than Gross *Domestic* Product) was depicted.² We can then compare that earlier view to what we now say happened.

For the earlier view, I went back to the *Economic Report of the President* for 1983. According to the data in the statistical appendix to that *Report*, real GNP rose at the following rates over the decades shown below:

1940s: 4.5%/annum

1950s: 3.3%/annum

1960s: 3.9%/annum

1970s: 3.1%/annum

But if we look at that same history as measured under current methodology (data obtained from the U.S. Bureau of Economic Analysis website, 5-16-2013), we find that the history has been somewhat altered:

1940s: 5.6%/annum

1950s: 3.5%/annum

1960s: 4.2%/annum

1970s: 3.2%/annum

Note that for each period, the pace of real output is higher as it is measured now than it was in the early 1983. The differences on a per annum basis are not huge. But over a four decade period, they cumulate. Statisticians in the early 1980s would have said that real output in 1980 was 4.3 times what it was in 1940. Now we would say it was 5.0 times higher. Folks in 1980, of course, didn't know about this retroactive jump in their prosperity!

When you look at the history of statistical measurement since the early 1980s, you will find that there was increasing concern about the official figures missing the "quality" improvements in computer-related products. The idea is that if a computer over time gets better, the effective price of a computing unit is becoming lower. It is safe to say, however, that some of the concern was not simply focused narrowly on the quality issue. There was a wider issue related to the measurement of inflation and its impact on such programs as Social Security which are indexed to the trend in (officially-measured) prices. The more that adjustments for improvements in quality were made in the official indexes of

² GNP = GDP + net receipts of income from abroad.

prices, the slower those price indexes would rise. As a result, the less expensive, other things equal, Social Security would be going forward.

One byproduct of a more slowly-measured rate of inflation was that since the price deflators used to adjust nominal values to real values would rise more slowly, the real measures would rise faster. It is likely that the impact of the various changes in methodology that occurred would have a more dramatic effect – again, other things equal – as computers became more important in businesses and households. Computers barely existed in the 1940s but by the 1970s their use was becoming more common. It was really in the 1980s and thereafter when computers, computer-related items, and other high-tech products, e.g., cell phones, took off.

Sadly, we cannot know what the indexes of real output for the 1980s and beyond would have looked like had output been measured using the methodology of the early 1980s. The keepers of the measurement grail could in principle produce such indexes – that is one of the benefits of the vaunted advance in computer technology – but they don't do so. Suppose, however, we look at the measurement of productivity for the business sector in the 1980s as it was seen in the early 1990s (using the *Economic Report of the President* of 1993) versus current figures for that period. In the early 1990s, productivity was said to have risen in the 1980s by 0.9% per annum. But as seen in the latest figures, the rise in the 1980s was actually 1.6%. Note that the difference over a ten-year period is roughly 7%.

Constant fiddling with key measurements – whatever the motivation – makes it hard to interpret events that take place over time. Let's take a simple example. Suppose a widget costs \$1 and a factory makes 100 widgets in a given time period – period 1 - using 100 worker hours. The gross value produced is thus \$100. In a later period 2, we observe the factory producing 75 widgets at \$1 per widget using 75 worker hours. The gross nominal value of the output is now \$75. We would seem to have a simple story. Demand for widgets fell for some reason and so the demand for worker hours fell in step.

Now suppose someone decides that widgets produced in period 2 were in fact better in quality than those produced in period 1. Suppose the effective price – *adjusted for quality* – is said to be only 75 cents per widget. When we divide the nominal value of output in period 2 by .75 we get a real value estimate of \$100. [$\$75 / .75 = \100 .] Another way of putting it is that each widget in period 2 is one third “better” than a period-1 widget. In any event, it now appears that the same *real* value of output that we had in period 1 is being produced in period 2 but using 25% fewer worker hours. Our story has changed; it appears that the demand for (effective) widgets was *unchanged* between period 1 and period 2 but that “technology” has displaced one quarter of the worker hours.

Economic policy will be different depending on which story is told. The deficient demand tale suggests that boosts in demand would be the remedy. The technology story suggests we need to have worker retraining programs to deal with structural displacement. We can't make a judgment as to which story might be correct unless we have details about how and why the quality adjustments to widget price measures were made.

Of course, back in the early 1980s or early 1990s, some adjustments *were* being made for quality to price indexes and to indexes of real value. But now we are apparently using more aggressive methods to seek out quality improvements. And the methodology in use regularly changes. It would be helpful to keep producing figures using the old and new approaches for those who want to understand changes in labor market demand for workers. The comparison would help users make their own interpretations of what is occurring and what policies are appropriate. The policy decision should not be made for them indirectly by changes in statistical methodology.

Consistency may be the hobgoblin of little minds in the opinion of some people. But when it comes to economic statistics, that view doesn't mean we should pay consistency no mind at all.